**Name: Ashish Acharya**

**CWID: 50337433**

**Class Name: CSCI 424- Business Analytics Model**

**Assignment Name: Final Analysis**

**Correlation Analysis:**

The correlation analysis reveals the strength and direction of relationships between variables. The correlation analysis is done between I) GDP and Income and II) Consumption and Production. The calculation of the correlation between them is as follows:

1. **GDP & Income: 0.002404**
2. **Consumption & Production: -0.17072**

In this scenario, the correlation between GDP and Income is extremely weak, suggesting almost no discernible relationship. This indicates a very weak positive correlation. This implies that there is a slight tendency for GDP and Income to move in the same direction, but the correlation is extremely close to zero, signifying that the relationship is practically negligible.

On the other hand, the correlation between Consumption and Production represents a weak negative correlation. This suggests that as Consumption increases, there is a slight tendency for Production to decrease, and vice versa. However, the correlation is not strong.

**Regression Analysis:**

For regression analysis, GDP is taken as a dependent factor and Production as independent. The regression analysis delves deeper into the relationship between GDP and Production. The moderate positive correlation (Multiple R of 0.397) suggests a positive linear relationship, indicating that as Production increases, there is a corresponding, albeit small, increase in GDP. The regression equation specifies this relationship, with the Production coefficient (3.27846E-09) representing the estimated change in GDP for a one-unit change in Production. The statistical significance of the model is supported by the ANOVA results, suggesting that the model is better than having no model at all. However, the model explains only a limited portion (15.8%) of the variability in GDP, indicating that other factors not considered in the model significantly influence GDP fluctuations.

**Forecast for 1991 and 1992 for GDP, Income and Production:**

* **1991:** GDP: 1.561832818 Income: -73,598 Production: -67,671,742
* **1992:** GDP: 1.446911073 Income: -89,174 Production: -79,973,544

These forecasted values are derived using the forecast function in Excel. The forecast function, likely implemented in Excel or a similar tool, utilizes historical data to predict future values. Past patterns in GDP growth rates, Consumption, Income, Production, and Saving play a crucial role in shaping the predictions.

**Line graph of the variables**